

UNITED STATES PATENT OFFICE.

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TRACTION-WHEEL.

SPECIFICATION forming part of Letters Patent No. 654,291, dated July 24, 1900.

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To all whom it may concern:

Be it known that I, HENRY T. STITH, a citizen of the United States, residing at Ottawa, in the county of Franklin and State of Kansas, have invented certain new and useful Improvements in Traction-Wheels, of which the following is a specification.

My invention is directed to improvements in traction-wheels wherein the rotation causes the wheel to lay its own track by the travel of a horizontal ellipsoidal frame within an endless chain of tread-supports, upon the traction-wheels of which, the frame is caused to travel with the travel of the tread-supports.

In the claims herein I will set out the precise improvements in connection with the accompanying drawings, which illustrate my improved traction-wheel device as applied to the driving-treadles of a bicycle; but the traction device is designed to take the place of the running-wheels of vehicles generally and to be driven by any suitable power connections applied to the middle of the length of the wheel to rotate the endless chain.

In the illustration in Figure 1 the endless traction device is employed as substituting the wheels of a bicycle, being pivotally connected to the frame at the points of the wheel-mountings—that is, to the fork and to the steering-post—the rear traction device constituting the treadle-propelled wheel. Fig. 2 shows in top view the frame-bars and their depending track-rails and the axle to which the driving power is applied. Fig. 3 shows in cross-section one of the tread-frames and its relation to the track-wheels and the sprocket-wheel, and Fig. 4 is a side view of the tread-frame and its track-wheels. Fig. 5 is a side view of the ellipsoidal traction-wheel. Fig. 6 is a vertical longitudinal section of the same, and Fig. 7 is a top view thereof. Fig. 8 is a cross-section of the same, taken on the line of the propelling-axle. Fig. 9 shows the tread-frame and its track-wheels in plan view. Fig. 10 is a detail showing flexible apron or mud-guard for the sprocket-chain. Fig. 11 shows the track-rail and the relation thereto of the track-wheels and the track-roll of the tread-frame. Fig. 11^a shows this track-roll arranged to act against a vertical flange, and Fig. 12 shows the traveling frame in cross-section.

The traveling frame comprises a pair of horizontal bars 1 1, open at their ends, between

and upon which are mounted the axles 2 2 of the sprocket-wheels 3 3, upon which is mounted an endless chain 4. The ends of these bars are curved toward each other, Fig. 2, but are not connected, for the reason that the sprocket-wheels are mounted in them so as to project and rotate outside of the frame and within and between the bars. Secured to and depending from each end of the traveling frame-bars is a track-rail 5 5, paralleled with the frame-bars and curved upward at each end concentric with the sprocket-wheels. These track-rails I prefer to make of angular cross-section for greater rigidity; but this angular form is only for the depending track-rail, the angle-flange 6, Fig. 5, of which, however, is made continuous above the frame-bars and concentric with the sprocket-wheels for a purpose which I shall presently state.

The frame-bars are connected at their ends by the fixed axles 2, on which the sprocket-wheels 3 are mounted to turn freely by sleeves 7, and the bars are braced by tie-rods 8 between the sprocket-wheels, while the track-frames are supported and braced from the frame-bars by braces 9 and cross-ties 10, Fig. 2, between the sprocket-wheels. This construction gives lightness and strength, with the track-rails hanging from the frame-bars and terminating at their ends.

While the mounting of the sprocket-wheels between the ends of the frame-bars gives them a projection beyond the frame-bars, it also gives them a projection above and below the bars, but particularly below the side track-rails, a distance equal to the diameter of the track-wheels 11, Fig. 1, for the purpose of bringing the propelling-chain beneath the track-wheels, and thereby carrying the tread-frames of the chain upon the ground, so that the traction device resting by its track-rails upon the track-wheels is thereby carried forward by the traveling frame 1 upon the track-wheels.

The tread-frames 12 are secured to the solid links 13, Fig. 3, of the chain at suitable distances apart—about six inches—and each tread-frame has a pair of track-wheels 11 on its opposite sides, arranged to run on the track-rails depending from the opposite side-bars, Fig. 8. The only friction upon the supporting track-wheels is along this track, while a third small roll 14, Figs. 3, 4 and 8, is mounted in the outer hanger-plate 15 of the